

INSTITUTIONAL BIOSAFETY COMMITTEE MEETING
January 20, 2021
3:00 PM, Zoom Meeting

MEMBERS PRESENT: Chair –Elizabeth Fozo, Vice Chair-Stephen Kania, Paul Dalhaimer, Lezlee Dice, George Dizikes, Doris D'Souza, Reza Hajimorad, Melissa Kennedy, Jun Lin, Deidra Mountain, Jae Park, Ling Zhao

Ex-Officio – Linda Hamilton, Ahmad Mitoubi, Sandra Prior, Brian Ranger, Jessica Woofter

MEMBERS ABSENT: Marc Caldwell, Feng Chen, Lori Cole, Brittany Isabell

OTHERS PRESENT: Tessa Burch-Smith, Bryan Cranmore, Sree Rajeev

Opening:

The IBC Chair called the meeting to order at 2:59 PM. The minutes of December 10, 2020, were reviewed and approved as written. There were no abstentions.

Full Member Review IBC Registrations:

#IBC-12-375-1 (Tessa Burch-Smith) Infectious Agents & Recombinant DNA (rDNA), III-E, 3-year rewrite

Dr. Tessa Burch-Smith's registration covers the study of plasmodesmata in plant cells. The study involves the Agrobacterium-mediated transformation of plants (*Nicotiana benthamiana* and *Arabidopsis thaliana*) with chloroplast genes involved in plasmodesmata formation/function tagged. The chloroplast genes are fused to genes encoding various fluorescent markers (e.g., GFP, YFP) or affinity purification tags. Additionally, the lab is investigating how the viral infection is affected by changes to chloroplast functions. Tobacco rattle virus (TRV) and/or Tobacco mosaic virus (TMV; wild-type and GFP-labeled recombinant) are applied to wild-type or transgenic *N. benthamiana* plants. The TMV-GFP movement in infected leaves is then monitored by UV light from a handheld light source. Containment was set at BL-1 to include adherence to the USDA APHIS BRS provisions for transgenic TMV containment. The committee approved the registration pending the inclusion of containment procedures for workrooms and growth chambers in the Technical Summary; a clarification about any cross-state shipment of the materials in the Technical Summary; an update to the biosafety certification dates; completion of Section 12 (Sharps Management); and an update to the autoclave validation date.

#IBC-20-548-2 (David Anderson) Infectious Agents, New registration

Dr. Anderson was present to discuss osteomyelitis, an inflammatory bone disease caused by an infecting microorganism that affects humans and animals. The result is progressive bone loss and destruction, accounting for significant morbidity and expense. Opportunistic Gram-positive staphylococci, specifically *Staphylococcus aureus*, are responsible for up to 75% of clinical

cases. Recent studies have demonstrated that bone cell invasion contributes to the development of infection, and bacteria initiate this invasion process by adhering to the osteoblast extracellular matrix components through the expression of adhesins. Once *Staphylococcus aureus* has adhered to bone cells and has become internalized, it can stimulate a shift in the relative levels of osteoblastic activity that can result in inflammatory bone pathology. The overall goal of this proposal is to better understand the pathogenesis associated with osteomyelitis induced hypertrophic mineralization initiated by *Staphylococcus aureus* infection in long bones, specifically the effect on osteoblasts. The amendment to the registration includes *in vivo* study procedures for a rat mandibular osteomyelitis model. Containment was set at BSL-2. The committee approved the amendment pending clarification in the Technical Summary that Cown I and USA 300 MSSA are non-cytotoxic; additional information regarding the *in vivo* study; clarification about *S. aureus* isolate methicillin-resistance for both *in vitro* and *in vivo* procedures; clarification of the bacterial concentration and inoculum levels under “Experimental Design and Procedures” of the Technical Summary; identification of biosafety cabinets and an update to their certification dates; the addition of animal carcass and/or pathological waste disposal procedures; and clarification regarding commercial transportation designation for Question 8.9-c.

#IBC-20-557-2 (Paul Dalhaimer) Recombinant DNA (rDNA) & Nanoparticles, III-D, New Registration, revisited

Dr. Dalhaimer’s registration covers the study of PEO-based nanoparticles (NPs) binding to SR-BI, the major receptor for high-density lipoprotein (HDL). This receptor is a possible NP entry point into mammalian cells that express SR-BI, including macrophages and hepatocytes. A crystal structure of LIMP-2, which is homologous to SR-BI, has been determined. This study aims to determine if these mutations also block the binding of NPs to SR-BI, and plasmids are to be expressed separately in HeLa cells to determine NP binding. The committee voted to approve this registration pending the removal of commercial shipping indicated in Section 10.9c.

#IBC-20-561-2 (Sreekumari Rajeev) Infectious Agents, New Registration

Dr. Rajeev was present to discuss her research covering Leptospirosis in Greater wax moths (*Galleria mellonella*). *Galleria mellonella* larvae are cheaper to establish and easier to maintain. The use of the *Galleria mellonella* larvae for experimental infection also does not require ethical approval, and their short life span makes them ideal for high throughput studies. This study aims to investigate the feasibility of using *Galleria mellonella* larvae as an animal model of *Leptospira* infection. *Galleria mellonella* larvae are inoculated with a variety of doses of *Leptospira spp.* isolates. The larvae are observed daily using a health index scoring system to assess the larvae’s health status. This health index scoring system assesses four major observations: larvae mobility, cocoon formation, melanization, and survival. These larvae are tested for *Leptospira* infection using real-time PCR to measure the organism’s bacterial load. The biosafety containment level was set to BSL-2. The committee approved the registration as written.

Designated Member Review IBC Registrations:

#IBC-15-432-2 (Ahmed Bettaieb) Recombinant DNA, Infectious Agents, Human Derived Materials, & Nanoparticles, III-D-3-a, Amendment

Dr. Ahmed Bettaieb investigates the regulatory roles of protein tyrosine phosphatases (e.g., Fas, nephrin, prolactin, etc.) in glucose metabolism homeostasis, energy expenditure, and

pathological disease signaling. His research includes the use of human and nonhuman primate cells and tissues (adipose tissue) as well as 2nd and 3rd generation replication-deficient lentiviral vector systems. The amendment includes the addition of liposome-like nanoparticles (LPNs) tagged with fluorescent peptides and encapsulating pharmacological inhibitors or activators of the target proteins used to assess their effects on metabolic regulation and homeostasis in mice and mammalian cells. The committee approved the registration through designed review pending inclusion of protein list; clarification of when goggles versus safety glasses are used for certain procedures; removal of the statement in the third paragraph describing the delivery of LPN's in vivo while using the biological safety cabinet; clarification of how the LNPs are formed or the process of encapsulation; changing Question 13.4 to indicate solid waste is disposed of with the medical contractor, Advantra; and indicating in the health surveillance that all personnel are offered Hepatitis B vaccines.

Old Business:

Administrative Report

i. Contingencies

Following up on December 10, 2020, IBC Meeting, Dr. Ripp's registration (#06-274-2) was corrected to include the expansion of the nontechnical summary to include a broader description for promoters used; removal of Dr. Stephenson's IACUC protocol, and the addition of a new protocol number; addition of the animal facility location; addition of biosafety cabinet certification dates; and the correction of Section 11.2 to indicate waste removal is processed through a medical contractor (Advantra). Dr. Alexandre's registration (#08-334-1) was edited to include the correction of the project title to accurately summarize research; the addition of outcome measures related to the project in the nontechnical summary; and the addition of a description in the technical summary regarding risk assessment of chemotaxis and subcellular localization observations are performed as well as the use of recombinant proteins. Dr. Dalhaimer's registration (#20-557-2) was edited and sent to the 1/20/2021 IBC Meeting for the review of the completion of the technical summary, the completion of the human-derived section, updates to the biosafety cabinet certification dates, clarification that CVM Central Sterilization launders the lab coats, an update of the shelf life for the ethyl/isopropyl alcohol surface disinfectant, updates to the spill response plan, assurance that appropriate lab personnel has been trained to complete dry ice shipping procedures, and the correction of Section 11.2 to change solid/non-sharp waste disposal is processed by a medical contractor (Advantra).

ii. Administrative Approvals

The Biosafety Officer administratively approved Dr. Dalhaimer's amendment to registration (#20-549-2), covering plasma inclusion from adults aged 18 – 60. Plasma is collected from patients at UT Hospital via the biobank.

iii. Administrative Terminations

None.

iv. Administrative Exemptions:

None.

- v. *Accidents, Injuries/Exposures:*
None.
- vi. *Laboratory Report (Hamilton)*
None.
- vii. *iMedRIS Update, Manual Reviews, & System Orientation (Woofter)*
Jessica notified the committee that Linda is working on the final draft, and once completed, it is forwarded on to Memphis OIT to incorporate in the iMedRIS training site (<https://imedris-training.uthsc.edu/>). Once the form is on the training site, committee members can access the form for testing.

New Business:

BSL-3 Preparations (Linda)

Linda notified the committee that the BSL-3 lab procedures and documentation are in the process of being updated. A team site is available for committee members to track, comment, and revise documents about the lab.

BMBL 6th Edition (Brian)

Brian notified the committee that the 6th Edition of the BMBL was released this past December. He is working on purchasing hard copies for members that would like a copy. The BMBL can also be accessed online at <https://www.cdc.gov/labs/BMBL.html>.

The meeting adjourned at 4:19 PM. The next meeting scheduled is for February 17, 2021, via Zoom.